# A Case Study on Geographical Indication Tagged Sirarakhong Hathei Chilli – An Economic Analysis

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Chilli (*Capsicum annum* L.) is an essential spice cum vegetable crop in India. India is rich in chilli biodiversity but many of the wild varieties of chilli are found in northeastern region of India. Sikkim's round cherry pepper, Assam's ghost chilli, King chilli of Nagaland, Mizoram's bird eye chilli, Manipur's Hathei chilli *etc.*, are some of the wild chilli varieties those are cultivated in this region.

The well-known Hathei chilli is found only at Tangkhul Naga inhabited Sirarakhong village near Mahadev hills in Ukhrul district of Manipur which has favourable conditions for its growth. In Tangkhul dialect bitterness is referred to as 'ha' and fruit is referred to as 'thei'; thus, the name is 'Hathei'. It is considered one of the best varieties of chillies in the world because of its taste, colour, flavour, length, softness, etc. Hence, it is called 'Pride of Ukhrul' and 'God's Gift' by the people of Sirarakhong village. Because of its unique characteristics, it was awarded a Geographical Indication (GI)Tag in 2021 which offers a better platform for obtaining premium price in the market.

Hathei chilli considered to have good health benefits. It is rich in anti-oxidant (Total flavonoids = 74.86 mg QE/g), calcium content (465.25 mg/kg) and vitamin C (2.0g/100g). This chilli had the lowest capsaicin content of 0.05 per cent compared to Naga King chilli of 0.55 per cent (Ananthan *et al.*, 2014). Dry chilli is widely used as spice for all the meat curries as Manipur is considered one of the meat-consuming states of India. It improves the colour and flavour of all the dishes naturally as similar to Kashmiri chilli.

We have conducted a case study in 2022 at Sirarakhong village. The primary information regarding its origin, cultivation practices, GI tag certification, economics and constraints were collected by interviewing 15 Hathei chilli cultivators. The total fixed and variable costs were identified and the per hectare cost and returns of Hathei chilli were estimated. Acharya and Agarwal method (Acharya and Agarwal, 2007) was used for analysis of marketing efficiency of chilli.

## How they started cultivating Hathei chilli?

Ancestors of Sirarakhong village collected the plant while going for hunting and raised it in their home without knowing that it was a chilli plant. Later when the plant blossomed and set fruit, it was recognised to be chilli plant. Since then, the raising of Hathei chilli in the village has evolved and cultivation of this chilli has become the primary source of income for the villagers. At present about 1243 farmers from households produce approximately 200 5000 kilograms of chilli from around 18 hectares of area per year. In every six months, each household harvests around 300 kilograms of chilli in one season (Khapudang and Bose, 2022).

Hathei chilli also has a link to cultural life of the people. They have a song representing Hathei chilli which describes it as 'red cover' over the hills which was given by the ancestors of villagers. They organise 'Hathei Phanit' (Hathei chilli festival) every year since 2010 to celebrate its quality and belief that its God's gift to the villagers of Sirarakhong. The main purpose of this chilli festival is to attract the buyers of this chilli from various parts of India. Also, this festival symbolizes the time of harvesting in Sirarakhong.

## How Hathei chilli got GI tag?

In 2015, farmers of Sirarakhong village formed a group and decided to protect their gift of nature as well as their income from Hathei chilli cultivation. In 2017, an application made by Manipur Organic Mission Agency (MOMA) at Directorate of Horticulture, Manipur for GI registration submitted to Geographical Indication Registry in Chennai.GI tag is an intellectual property right that recognizes the unique qualities and characteristics of a product



originating from a particular geographical region. Further, the application under the name 'Hathei chilli' falling under the class-30 accepted in 2020 under subsec (1) of section-13 of Geographical Indication of Goods (Registration and Protection) Act, 1999. The GI tag is helping the farmers of Sirarakhong village to preserve and promote their traditional variety of chilli which was the verge of extinction due to the emergence of hybrid and imported varieties. It has also given the farmers a distinct identity and recognition in the market which has helped them to command a better price of their produce.

### Cultivation practices followed by villagers

Hathei chilli is cultivated widely under jhum or shifting cultivation on the hill slopes of Sirarakhong village. Raised beds are prepared manually and covered with farm waste, manures, etc. The most preferred soil for Hathei chilli cultivation is well drained light soil varying from loamy to sandy loam. Seeds from the previous year's crop are traditionally preserved for next year's sowing. Cultivators sow their seeds in raised bed nursery under polyhouse structure during the month of March and April. The seedlings are transplanted to the main field after 30-40 days of sowing. It is grown as a rainfed crop, the suitable time for transplanting is rainy season *i.e.*, May-June. The high amount of rainfall for the period of six to eight months helps the cultivators grow Hathei chilli without irrigation.

Due to jhum cultivation, weeds and diseases are controlled during the initial phase but after that the crop requires frequent weeding. We found that they do not use any herbicides for weed control. Since the cultivation takes place in forest area, the soil is highly fertile and therefore cultivation is done without inorganic fertilizers. Besides, jhum cultivation ensures more potash availability which help the crop to grow well and provides good colour to the chilli fruit. Harvesting of chilli fruits start from July-August onwards. It is harvested green or left to ripen on the plant. The ripen harvested fruits are sun dried or dried with the help of local furnace with proper stirring. The dried chillies are packed and stored in a dry place. Some of the farmers grind the chillies by using pestle and mortar and sell after proper packing in plastic bags.

Table 1. Cost of cultivation of Hathei chilli perhectare

Sl. No.	Particulars	₹/ha	%
А.	Variable cost		
1	Hired labour	6541	24.95
2	Family labour	4900	18.69
3	Seed	437	1.67
4	Manures	703	2.68
5	Fertilizer	738	2.81
6	Organic pesticides	1285	4.90
7	Interest on working capital	5111	19.49
	Sub-total (A)	19714	75.19
В.	Fixed cost		
1	Depreciation on farm		
	implements	719	2.74
2	implements Land revenue	719 0	2.74 0.00
2 3	implements Land revenue Rental value of leased in land	719 0 2797	2.74 0.00 10.67
2 3 4	implements Land revenue Rental value of leased in land Interest on fixed capital	719 0 2797 2989	2.74 0.00 10.67 11.40
2 3 4	implements Land revenue Rental value of leased in land Interest on fixed capital <b>Sub-total (B)</b>	<ul> <li>719</li> <li>0</li> <li>2797</li> <li>2989</li> <li>6505</li> </ul>	<ol> <li>2.74</li> <li>0.00</li> <li>10.67</li> <li>11.40</li> <li>24.81</li> </ol>

#### Cost and returns of Hathei chilli cultivation

Table 1 indicates that the total cost of Hathei chilli cultivation was ₹ 26219.14/ha. The share of variable cost in total cost was found maximum (75.19%) while the share of fixed cost was 24.81 per cent. The share of hired labour wages in total cost was maximum (24.95%), followed by a share of interest on working capital (19.49%) and family labour wages



(18.69%). The expenditure incurred on organic pesticides, fertilizer, manure and seed were less than 5per cent to the total cost. The share of seed cost was found to be least as the farmers preserve their own seeds from previous year's chilli crop for future use. Among the fixed expenditure, interest on fixed capital contributed maximum to the total cost share (11.40%), followed by rental value of leased in land (10.67%) and depreciation (2.74%).

Income from Hathei chilli cultivation on per farm basis is presented in Table 2. The per hectare gross farm income and net farm income from Hathei chilli cultivation was estimated to be ₹ 70031/ha and ₹ 26219/ha, respectively. The benefit cost ratio was calculated to be 1: 2.67.

# Table 2. Income from Hathei chilli cultivationon per hectare basis

Sl. No.	Particulars	₹/ha
1	Gross Farm Income	70031
2	Total Cost	26219
3	Net Farm Income	43812
4	Benefit-Cost ratio	2.67

## Marketing of Hathei chilli

The villagers sell the chilli as green in the case of first harvest due to lower yield. From the second harvest onwards, cultivators leave the chillies in plants until it become dark red in colour, which is the maturity index for processing as dry chilli. They do not get much incentive to sell their produce directly to consumers in distant markets due to scattered villages low population density, lack of accessibility and high perishability. The fresh green chilli fetches less value in compared to dry chilli.

The Hathei chilli cultivator sell their produce primarily in two major markets *i.e.*, Ema market in Imphal and Ava market in Ukhrul. Three marketing channels for dry chilli were identified during our interview. The three channels were as follows. **Channel I:** Producer  $\rightarrow$  Wholesaler $\rightarrow$  Retailer $\rightarrow$  Consumer

**Channel II:** Producer  $\rightarrow$  Retailer  $\rightarrow$  Consumer, and

**Channel III:** Producer→ Consumer

Table 4 reveals that marketing cost of Hathei chilli was the highest in case of Channel I (₹ 36/kg), followed by Channel II (₹ 14/kg) and Channel III (₹ 7/kg). Marketing margin earned by different intermediaries was highest in case of Channel II (₹ 554/kg), followed by Channel I (₹ 382/kg) and price received by the producers was the highest in case of Channel III (₹ 900/kg). Consumer paid ₹ 1233, ₹ 1467 and ₹ 960 per kg in Channel I, Channel II and Channel III, respectively. So, the price spread was found to be highest in Channel II (₹ 590/kg) and the lowest in Channel III (₹ 60/kg).

Even though the marketing of Hathei chilli through Channel II was the most preferred by the Hathei chilli cultivators, the producer under this channel realised only around 60 per cent of share in consumer's rupee and efficiency was found to be the lowest (1.59) which is not reasonable from the point of view of efficient marketing. The marketing efficiency for Channel III was the highest (15.43).

Table 4. Marketing cost, margin, efficiency a	and price
spread in different marketing channels	(₹/kg)

Sl. No.	Particulars	Channel I	Channel II	Channel III
1	Net price received by producer	815	876	900
2	Marketing cost	36	14	7
3	Marketing margin	382	554	53
4	Price paid by the consumer	1233	1467	960
5	Price spread	418	590	60
6	Efficiency	1.96	1.59	15.43
7	Producer share in consumer rupee (%)	66	60	94



# Constraints and suggestions by Hathei chilli cultivators

Our interview revealed that Hathei chilli cultivators of Sirarakhong village faced various constraints related to production as well as marketing. Since it is a native variety, its yield is lower compared to other hybrid varieties of chillies. Due to topography, high altitude, distance and the lack of accessibility of agricultural land, modern crop management practices could not be followed in this village. The high incidence of weeds led to the maximum expenditure incurred on human labour for the weeding operation alone which increased the total cost of cultivation. Pest incidence was also high since they follow a natural way of cultivation. Poor road condition and transportation facility, high altitude and less storage facilities were the different marketing constraints faced by the Hathei chilli cultivators.

### Conclusion

This case study reveals that Hathei chilli is at the heart of Sirarakhong village and it bears economic significance for the farmers of the village. The crop is cultivated organically which makes the cultivation of this chilli profitable as it fetches relatively higher price at market. Though this variety has got GI tag but the potential of it is yet to be realized by the farmers of the village. Efforts to market it at national and international market are required. Marketing strategies viz., better packaging, branding and advertisement need to be prioritized so as to take the full benefit of this native variety of chilli.

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